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Investigation of the equilibrium establishment in the spin system by using dipole magic echo

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Abstract

An experimental and theoretical investigation of the equilibrium establishment in an isolated spin system is performed. The "time-reversion" effects were used at the experiments. Comparison of the description of the experimental results obtained on the basis of reversible equations of mechanics and nonequilibrium thermodynamics is carried out. It is demonstrated that the equations of mechanics do not describe the spin macrosystem transition to the equilibrium. The experimental results correspond to the theory which is based on the nonequilibrium thermodynamics methods and takes into account the quick decay of cross-correlations in the systems.